Title	**Use measurements for infrastructure works purposes**		
Level	**3**	**Credits**	**6**

Purpose	People credited with this unit standard are able to: identify and convert standard units of measurement; use area measurement; calculate and use volume and weight measurements; and use proportions for infrastructure works purposes.

Classification	Infrastructure Works > Generic Infrastructure Works

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with relevant legislation. Evidence showing working of calculations and the use of mathematics is required.

2 Definition
Weight is used in this unit standard to refer to measurements in kilograms not Newtons.

Outcomes and performance criteria

Outcome 1

Identify and convert standard units of measurement used for infrastructure works.

Range units of measurement include – length, area, volume, weight.
evidence of two units of measurement for each item in the range is required.

Performance criteria

1.1 Measurements used for infrastructure works activities, materials, and products, are identified.

1.2 Measurements are converted from one unit of measurement to another; relevant to infrastructure works activities, materials, and products.

Outcome 2

Use area measurement for infrastructure works purposes.

Performance criteria

2.1 Using a plan, the area of an irregular shape is estimated to the accuracy of one square unit.

2.2 The area of a rectangular sports field or car park is calculated for an infrastructure activity accurate to two decimal places.

2.3 The area of a triangular space is subtracted from a rectangular area for an infrastructure activity accurate to two decimal places.

2.4 The area of a parallelogram or trapezoid shaped surface is calculated and used to determine a coverage rate.

2.5 Areas incorporating circular boundaries are calculated using geometry.

Range areas include – a traffic roundabout, a part of a circle relevant to infrastructure works.

Outcome 3

Calculate and use volume and weight measurements for infrastructure works purposes.

Range methods may include but are not limited to – end areas, prisms, cross sections, estimating, standard geometrical shapes;
evidence of three methods is required.

Performance criteria

3.1 The volume of a cylindrical tanker is calculated and used to estimate the number of loads required to fill or empty a storage tank of specified size.

3.2 The volume of a heap is calculated and the number of loads to remove it is estimated for a given load size.

Range heaps may include – spill, stockpile.

3.3 The volume of material required for an infrastructure works activity is calculated to the nearest cubic unit.

3.4 The weight of material required to fill a given area is calculated to determine the number of loads required to transport material to an infrastructure works site.

3.5 Weight of infrastructure works materials to the nearest unit is estimated from a given cubic measurement.

Range evidence of two materials is required.

3.6 The filled weight of a container is estimated for infrastructure works materials.

Range evidence of three materials is required.

Outcome 4

Use proportions for infrastructure works purposes.

Performance criteria

4.1 Ratios are used to determine the number of containers or loads of each component to supply a works site with materials for a specified mix.

Range mix has at least three components.

4.2 Ratios are used to work out how much of a mixture has to be added to top up a partially filled container and calculate how much of each component is required to maintain the same mix.

Range mix has at least two components;
components may include – agrichemical, additive, modifier, water, wetting agent.

4.3 Percentages are calculated accurate to one decimal place for a decrease in relation to an infrastructure works activity.

Range calculations may include – crossfall, costs.

4.4 Percentages are calculated accurate to two decimal places in relation to an infrastructure works activity.

Range calculations may include – active ingredient, compaction, concrete mix.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 March 2011	31 December 2023
Review	2	30 September 2021	N/A

Consent and Moderation Requirements (CMR) reference	0101

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.